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Effects of a Peer-Led Media Literacy Curriculum on Adolescents' Knowledge and Attitudes Toward Sexual Behavior and Media Portrayals of Sex

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The United States has the highest rates of teenage pregnancy and birth in the Western industrialized world, and research indicates that television and other mass media are important sources of sexual information for young people. The purpose of this study was to determine if a teen-led, media literacy curriculum focused on sexual portrayals in the media would increase adolescents' awareness of media myths concerning sex, decrease the allure of sexualized portrayals, and decrease positive expectancies for sexual activity. A posttest-only quasi-experiment with control groups was conducted at 22 school and community sites in Washington state ($N = 532$). The intervention, a 5-lesson media literacy curriculum targeted primarily to middle school students, encouraged sexual abstinence because of federal government funding requirements. Adolescents evaluated the program positively, with 85% rating it as better than other sex education programs. Compared to control-group participants, students were less likely to overestimate sexual activity among teens, more likely to think they could delay sexual activity, less likely to expect social benefits from sexual activity, more aware of myths about sex, and less likely to consider sexual media imagery desirable. The results showed that media literacy has promise as part of a sex education program by providing adolescents with a cognitive framework necessary to understand and resist the influence of media on their decision making concerning sex.

Mediated sexual portrayals and their consequences for teen health are of increasing concern to health communication specialists, educators, and researchers. Each year approximately

4 million adolescents contract a sexually transmitted disease (Kaiser Family Foundation, 2005). In addition, approximately 34% of women under the age of 20 become pregnant, accounting for about one fourth of all unintended pregnancies (National Campaign, 2004). The teenage birth rate in the United States is the highest in the Western industrialized world, costing a minimum of \$7 billion every year

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(Abma, Martinez, Mosher, & Dawson, 2004; National Campaign, 2004).

Adolescents spend an average of 8 hours a day consuming mass media, of which 3 to 4 hours each day is devoted to watching TV (Roberts, Foehr, & Rideout, 2005). Research indicates that sexual content and related portrayals dominate television programming content, including those programs popular with adolescents (Kunkel et al., 2003). Because TV plays such an important role in the lives of adolescents, research results indicate it is an important and frequently used source of sexual information, along with parents and peers (American Academy of Pediatrics, 2001; Kaiser Family Foundation, 2003b; Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005; Ward, 1995, 2003). Nevertheless, when asked to think about role models on TV that promote healthy decision making regarding sex, 86% of teens are unable to name any (Kaiser Family Foundation, 2002).

Even though the teenage pregnancy rate has declined for the past several years, adolescents in the United States have higher pregnancy and birth rates, lower rates of contraceptive use, and higher rates of sexually transmitted infections than do adolescents in other developed countries, including Great Britain, Australia, France, and Germany (Schaalma, Abraham, Gilmore, & Kok, 2004; Singh & Darroch, 2000). One response of the federal government has been to fund abstinence-only sex education programs. Federal definitions of abstinence-only education include teaching young people that social, psychological, and physical benefits accrue when they refrain from sexual activity (Santelli et al., 2006).

Researchers' have expressed concerns that abstinence-only messages are inadequate from a comprehensive sex education perspective, and research findings are inconclusive concerning their effectiveness (Kirby, 2002a; Schaalma et al., 2004). Given these concerns, the purpose of this study was to evaluate the efficacy of a peer-led, media literacy program concerning sexual abstinence. The program, developed by the Experimental Education Unit at the University of Washington, uses media literacy to communicate information regarding abstinence and sexual health to young people. The evaluation is based on participants' understanding of media and on their decision-making processes, and provides an evidence-based test of the effectiveness of the program as a catalyst for better decision making about sexual behavior.

ADOLESCENTS AND MEDIATED SEXUAL CONTENT

The prevalence of sexual portrayals in the mass media provides adolescents with numerous, often misleading, sexual depictions ranging from kissing and flirting to relatively explicit portrayals of sexual intercourse (Kaiser Family Foundation, 2003a, 2003b; Kunkel, Cope, & Colvin, 1996). Sexual depictions are so common that adolescents encounter

in the range of 10,000 to 15,000 sexual references or jokes and instances of nudity in the media each year (Strasburger, 2005). Sex-related scenes appear on television at an average rate of 4.6 per hour and the amount of sexual content on television has increased from 56% in 1998 to approximately 70% in 2005 (Kunkel et al., 2005). Meanwhile, nearly 90% of the television programs containing risky sexual behaviors fail to provide any information concerning risks or responsibilities associated with sex (Cope-Farrar & Kunkel, 2002), and only 4% of programs popular with adolescents mention any risk or responsibility related to sexual behavior (Kunkel et al., 2005).

Researchers note that media portrayals generally provide little information about sexual health and tend to promote sexual stereotypes (Huston, Wartella, & Donnerstein, 1998; Kaiser Family Foundation, 2003a; Kunkel et al., 1996; Lowry & Shidler, 1993). Content analyses reveal that television programs commonly provide glamorized, unrealistic portrayals of sex (Greenberg, 1994) and portray sexual intercourse as a leisure activity, for example (Arnett, 2002). According to a content analysis of the 15 most popular teen shows, 75% of characters who engaged in sexual activity commonly experienced positive outcomes as a result of their sexual experience (Kaiser Family Foundation, 2003b). Brown and Steele (1995) note that adolescents are more likely to emulate the portrayed sexual behaviors when they perceive that characters on TV rarely suffer from negative consequences of unprotected sexual behavior.

Research results consistently show an association between television viewing and adolescents' sexual attitudes and behaviors (Brown, Halpern, & L'Engle, 2005; Brown et al., 2006; Collins et al., 2004; Kaiser Family Foundation, 2002; Ward & Friedman, 2006). Nearly three of every four 15- to 17-year-old adolescents report that TV makes sexual behavior seem normative among adolescents and influences other teenagers' sexual behavior, and one fourth report that sexual television programs directly influence their own behavior (Kaiser Family Foundation, 1996, 2002).

Adolescents' exposure to sexual television content associates with their initiation of sexual behavior (Collins, et al., 2004; Ward & Friedman, 2006). Research by Ward and Friedman indicates, for example, that exposure to sexual content and higher identification with popular TV characters associates with higher levels of high school students' actual sexual experience. The results of longitudinal research indicate that viewing sexual activity on television affects 12- to 17-year-olds' sex-related attitudes and behaviors even a year later (Collins, et al., 2004). Additional research results concerning media exposure and sexual behavior conducted by Brown et al. (2006) reveal that a strong association exists between sexual content in the mass media and adolescents' self-reported sexual experiences 2 years later.

ADOLESCENT SEX EDUCATION

There are a number of approaches to reducing adolescent sexual activity and its consequences, including unintended pregnancies and the spread of sexually transmitted infections. Despite generally strong public support for such programs, however, the specific nature of programs depends on the social and political context in which they are developed and delivered; these can affect program quality and outcomes (Kirby, 2002b; Santelli et al., 2006; Schaalma, et al., 2004). Most youth receive some form of sex or HIV-prevention education when they are in school, for example, but teachers may omit important topics (Kirby, 2002b). As a result, although a variety of programs have positive effects on variables related to a reduction in adolescent sexual activity, research results indicate that only some programs successfully delay the onset of sexual activity or increase contraceptive use.

Kirby (2002a) identifies several commonalities among programs that successfully reduced unprotected sex among participants. These distinguishing characteristics, which reflect basic aspects of effective pedagogy broadly, also are similar in characteristics to programs that effectively reduce substance abuse (Dusenbury & Falco, 1995). In general, effective sex education programs focus on limiting behaviors that contribute to HIV/STD infection and unplanned pregnancies and are based on approaches that successfully reduce health-related risky behaviors. Scholars suggest that health-promotion programs have a greater likelihood of being effective when they are based on theory supported by empirical evidence (Bartholomew, Parcel, Kok, & Gottlieb, 2001). It is significant to note that theoretical perspectives proven useful in other areas of health communication also have proven useful in understanding sexual behavior and adolescents' responses to sex education (Schaalma et al., 2004).

Experts commonly criticize abstinence-only programs for failing to provide participants with a complete understanding of sexual behavior and pregnancy and HIV/STD prevention. Abstinence-only programs commonly emphasize that refraining from intercourse and related sexual behaviors is the only appropriate choice for young people. These programs typically contain little or no information regarding contraceptives or they may address contraceptive failure to protect completely against pregnancy and STDs (Kirby, 2002a). Currently, the best available evidence has indicated that the effectiveness of abstinence-only programs is quite poor in reducing adolescents' sexual activity (Kirby, 2002a, 2007; Silva, 2002).

Nevertheless, although programs based solely on abstinence generally have not proven effective at delaying the onset of adolescent sex (e.g., Borawski, Trapl, Lovegreen, Colabianchi, & Block, 2005; Denny, Young, & Spear, 1999; Kirby, Korpi, Barth, & Cagampang, 1997; St. Pierre, Mark, Kaltreider, & Aikin, 1995; Zanis 2005), there is some

evidence indicating that teens who make a pledge of abstinence may delay sexual behavior (Bearman & Bruckner, 2001) and that abstinence campaigns with broad community participation may help delay adolescent sexual activity and reduce unintended pregnancies (Doniger, Riley, Utter, & Adams, 2001).

Among school-based sex education programs, peer-led curricula in particular have drawn researchers' attention because people generally consider information from similar sources more trustworthy and less threatening (Rogers, 1983; Rogers & Kincaid, 1981). People are more likely to believe that a source is credible when they perceive a high degree of source-audience similarity, suggesting that peers can serve as a credible source of information for health-education programs targeting adolescents (Caron, Godin, Otis, & Lambert, 2004; Perry, Kelder, & Komro, 1993; Telch, Miller, Killen, Cooke, & Maccoby, 1990). A variety of research suggests that peer-led programs are effective in helping to prevent adolescent tobacco use (e.g., Austin, Pinkleton, Hust, & Cohen, 2005; Black, Tobler, & Sciacca, 1998; Fountiene, 1995; Tobler & Stratton, 1997).

In terms of peer-led sex education programs, Caron and colleagues (2004) found no differences among experimental and control group members' intentions to postpone sexual intercourse 9 months after the program, but the experimental group demonstrated stronger behavioral control and more perceived responsibility regarding sexual behaviors. In addition, participants' perceived self-efficacy related to their onset of sexual activity was significantly higher for treatment group members than for those who did not receive the treatment.

Also, research indicates that participants in peer-led programs perceive that their peers have more sexual health knowledge than do adult program leaders, whether these perceptions are true or not. More important, this perception contributes to actual knowledge gain (Dunn, Ross, Caines, & Howorth, 1998; Smith, Dane, Archer, Devereaux, & Katner, 2000). Dunn et al. found, for example, that students gained more knowledge of sexually transmitted diseases in a peer-led class than did participants in a nurse-led program. Similar findings have emerged in other evaluations of sex education programs (e.g., Aaron et al., 2000; Smith et al., 2000). Together, these findings suggest that when participants identify with and perceive similarities to their peer leaders they may reap benefits specifically related to knowledge gain, perceived self-efficacy, and stronger behavioral outcomes.

Researchers have used various theoretical models to design and evaluate school-based sex education programs. Austin and colleagues (e.g., Austin & Meili, 1994; Austin, Pinkleton, & Fujioka, 1999; Austin & Knaus, 2000) proposed the message interpretation process (MIP) model, which provides a theoretical framework for understanding how people process information and make decisions that lead to behavioral change. The MIP model incorporates theoretical

concepts existing in social cognitive theory (Bandura, 1986), expectancy theory (Goldman, Brown, & Christiansen, 1987), and dual processes theories of persuasion (Chen & Chaiken, 1999) to understand how people use media to make decisions.

The model focuses on how individuals' interpretations of messages can lead to their adoption or rejection of message content. According to the MIP, individuals respond to messages with a combination of logical comparisons and affective reactions. Although logic dictates much in receivers' responses to media messages, affective reactions can alter the logical decision-making process (Austin, et al., 2002). The degree to which advertising messages seem desirable to young people, for example, can encourage them to emulate behaviors portrayed in messages and to believe that emulating those behaviors will engender personal benefits (Austin & Knaus, 2000).

Research has established that expectancies and efficacy for a perceived behavior often guide future behavior (Austin & Knaus, 2000; Bandura, 2002; Christiansen, Roehling, Smith, & Goldman, 1989; Goldman et al., 1987). Researchers also have found that higher levels of skepticism toward messages can help curb young peoples' desire to emulate behaviors, helping to counter negative message outcomes (Austin & Knaus, 2000; Austin, Chen, & Grube, 2006; Austin et al., 2002). By enhancing young people's understanding and awareness of media techniques, media literacy helps to increase their scrutiny of media messages and can specifically enhance their skepticism toward advertising (Austin, Chen, Pinkleton, & Quintero-Johnson, 2006; Austin et al., 2002).

MEDIA LITERACY AS THE BASIS FOR SEX EDUCATION

The ubiquitous nature of sexual content in the media and the primacy of the media as a source of sexual information for adolescents raise the potential for the media to serve as a catalyst for sex education programming. In general, scholars define media literacy broadly in terms of a person's ability to access, analyze, evaluate, and communicate messages in a wide variety of forms (Aufderheide, 1993). As the field has developed, educators and others typically have focused on teaching young people the process of critically analyzing and learning to create media messages (Brown, 1998; Hobbs, 1998). A variety of media literacy curricula exist with little standardization regarding approaches and applications. Regardless of differences in perspective and approaches to media literacy education, the common goals of most curricula include helping young people become informed, active participants in the communication process rather than passive message targets (Brown, 1998; Nathanson & Cantor, 2000).

Some media literacy programs help young people develop negative affect—such as skepticism—toward

media messages rather than teaching young people sophisticated reasoning abilities. It also is common for media literacy interventions to take a pedagogical approach, helping participants develop knowledge about media production processes to enhance their critical thinking and to understand the misrepresentations of reality that commonly are a part of the media landscape (e.g., Centers for Disease Control and Prevention, 1999; United Church of Christ, 1996). Curricula such as AdSmarts (Scott Newman Center, 1993) and AdWise (Washington State Association of Broadcasters, 1995), for example, aim to “impart knowledge about media,” (Graham & Hernandez, 1993, p. 6). These curricula also may include exercises to help young people practice testing the realism and truthfulness of media messages, often with positive outcomes. In general, media literacy evaluations suggest that activating individuals' reflective thinking during media exposure strengthens their decision-making processes (Austin & Johnson, 1997a, 1997b).

This study focuses on whether a peer-led media literacy curriculum focused on sexual portrayals in the media will be well received by adolescents and will produce positive outcomes related to sexual decision making. The media literacy lessons were largely interactive and included lessons about the health risks associated with sexual activity and lessons in which students created their own media messages. As Hobbs (1998) has asserted, individuals who understand media production processes tend to understand that media messages are carefully constructed and become more adept at identifying the motives, purposes, and points of view embedded in messages. Because of the curriculum's focus on both skill development and motivation enhancement, media literacy training should increase youths' understanding and behaviors relevant to media and sexual abstinence, as hypothesized.

1. H1: Media literacy training will produce the following differences in media-based perceptions between treatment group participants and control group participants: (a) more awareness of media influence on teens' sexual behavior; (b) greater awareness of media myths concerning sexual behavior and its consequences; and (c) lower perceived desirability of media messages concerning sex.
2. H2: Media literacy training will produce the following differences in perceptions related to sexual behavior between treatment group participants and control group participants: (a) higher levels of efficacy; (b) lower expectancies; (c) more accurate perceptions of peers' sexual norms; and (d) more positive attitudes toward abstinence.

Given the sensitivity of sex education as an issue, it is possible that sex differences might arise in response to the lessons. Existing studies indicate that adolescent girls and boys respond somewhat differently to sex education curricula, with boys sometimes more resistant (Measor, Tiffin, & Fry,

1996) and girls tending to use more sources of information to learn about sex than boys (Kaiser Family Foundation, 1998).

Research concerning information processing and media effects suggests that gender differences may be due in part to the way males and females respond to information, rather than due to something specific in the content of sex education lessons. For example, males are normally less likely to critique sexual imagery in television advertising and express more positive attitudes about female nudity in print ads (LaTour & Henthorne, 1993; Rouner, Slater, & Domech-Rodríguez, 2003).

Scholars from several different research traditions have found that males and females often approach message interpretation differently, as the result of cultural and situational differences experienced over the course of social development. Bem (1993), for example, suggests that parents, media discourse, and social institutions shape gender-role behavior, thereby creating schemas for appropriate social behavior. These schemas may facilitate sex-based differences in message processing (Andsager, Austin, & Pinkleton, 2002; Meyers-Levy, 1988). In addition, Meyers-Levy and Sternthal (1991) have focused on differences in processing style, suggesting that men appear to require a higher motivational threshold than do women before engaging in systematic processing, although when men are motivated to use systematic processing, they do so quite capably. Both of these factors suggest that men and women will make different inferences about content.

This theorizing finds further support in physiologically based research, which has shown that males and females sometimes use different parts of the brain to accomplish the same task. Women appear to use more parts of the brain for a given task than do men, helping to make women more efficient at systematic processing tasks and more apt to consider context and relationships in their evaluations of products (Kreeger, 2002; Putrevu, 2001). Men appear to concentrate effort from one area of the brain on a particular task (Kreeger, 2002). This can lead to less cognitively flexible interpretations of content among men (Darley & Smith, 1995), who draw inferences that are more attribute specific than relational (Putrevu, 2001). Of particular relevance for educational programs targeting adolescents, research has found that certain parts of the brain develop at different rates among males and females (Kreeger, 2002), and social experience can affect brain development (Insel & Fernald, 2004).

When examined as a whole, these various lines of research suggest that males may need or benefit more than females from help that focuses on information-processing strategies. Research concerning gender differences in responses to alcohol advertisements, for example, indicates that women arrive at expectancies through a more logical interpretation process than do men (Austin, in press), based on realism and the desire for social success (identifying with the people in the ads). Men, on the other hand, appear

to respond more to heuristics based on self-relevant information (Meyers-Levy, 1988). The findings suggest that men require stronger defenses against advertisements that take advantage of their higher threshold for systematic processing. Thus, although males and females may both be vulnerable to messages about sexual behavior, their vulnerabilities may stem partly from information-processing differences that require them to develop different resistance strategies. Together, these research results suggest that a curriculum designed to motivate young people to systematically process messages about sexual imagery could have a more striking effect for boys than for girls, particularly during the adolescent years. Nevertheless, research regarding sex differences in response to sex education curricula has been relatively sparse and inconclusive, leading to the following research question.

1. RQ1: Will any sex-based differences occur as a result of participation in the media literacy program?

METHOD

Researchers evaluated the *Take It Seriously: Abstinence and the Media* (TISAM) media literacy curriculum developed by the Teen Futures Media Network at the University of Washington. The evaluation was based on a posttest-only, quasi-experimental design with control groups according to a protocol approved by a university Institutional Review Board. Parents provided written consent and participants provided written assent. Participants were 532 11- to 19-year-olds living in western Washington state, mostly in Seattle and nearby areas. Of those indicating gender, 52.7% were females ($n = 273$) and 47.3% were males ($n = 245$). Participants averaged 14 years of age, and the majority of them were ninth graders ($n = 341$, 62.6%). Although most of the sample was White ($n = 366$, 72%), participants were more ethnically diverse than the state's population. The sample included 13% who identified themselves as Latino, 9% who identified themselves as Asian, 8% who identified themselves as African American, 8% who identified themselves as Native American, 11% who identified themselves as "Other," and 4% who did not identify their ethnic background. Participants could select more than one choice to describe a multiracial background. Because the study was conducted in the field, research team members were unable to randomly assign participants to conditions. Campbell and Stanley (1963) address the difficulties of administering pretests and posttests in field studies. They note that a posttest-only design with control groups is appropriate when pretests are not practical for a variety of reasons researchers commonly encounter in field studies. The purposive, dimensional sample consisted of high school classes and community groups in urban and rural communities throughout the state. Participants sites were selected to provide geographic

and demographic diversity, but the sample was dependent on volunteer participation by invited sites. A nearly equal number of participants were assigned to the treatment and control groups.

No significant differences existed between conditions for income or gender. Participants in the control group were slightly older ($M = 14.3$) than treatment-group participants ($M = 13.9$). Participants in the treatment group reported earning slightly lower grades and had less ambitious educational aspirations than did members of the control group, suggesting they could have been at higher risk than control-group participants. The treatment group also included more self-identified Native American and Latino members, although African Americans were equally represented in the treatment and control conditions.

MEDIA LITERACY LESSONS AND PRESENTER TRAINING

The Teen Futures Media Network at the University of Washington developed the following five lessons for the TISAM project in conjunction with Washington state's efforts to fulfill the federal mandate to provide community-based abstinence education projects.

Lesson 1, *Using Sex to Sell*, focuses on the ways in which advertisers use sex to sell products to young people. The lesson encourages teens to explore the underlying messages about sexuality as they exist in magazine advertising. Lesson 2, *Fantasy and Reality*, emphasizes the myths and truth about teen sex and pregnancy. Lesson 3, *Want to Be a Statistic?*, uses television shows popular with teens as a point of reference for discussions on sexually transmitted infections. Lesson 4, *It's Your Choice*, addresses students' choices regarding whether or not to become or remain sexually active, and encourages students to consider abstinence (at no point were students encouraged to take a pledge of abstinence). The final lesson, *Make a Media Message*, allows participants to express their own views and demonstrate what they learned about media literacy by creating their own media messages.

Teachers or other adult leaders nominated teen presenters to participate in the program. Teen Futures Media Network staff taught each presenter about media literacy, sexual content in media messages, and various aspects of sex education, including abstinence, at a mandatory, all-day training session. During the training, teens practiced delivering media literacy lesson material to other teen presenters. During the program, teen presenters taught the lessons in the presence of a qualified adult.

Measures

The purpose of the evaluation was to assess the perceived effectiveness of the TISAM media literacy curriculum and

the potential benefit of media literacy generally as part of a sex education program. Unfortunately, researchers were unable to obtain measures of actual sexual behavior under the terms of the Institutional Review Board approval for the use of human subjects. In addition, study implementation in a field-based setting prohibited the collection of delayed posttest data. Researchers used 7-point scales with strongly disagree and strongly agree as anchors to measure the following decision-making constructs because of their previous benefit for evaluating health communication programs (Austin, Pinkleton, & Fujioka, 2000; Austin et al., 2005; Pinkleton, Austin, Cohen, Miller, & Fitzgerald, 2007).

Awareness of media influence. Participants' indicated their understanding of the extent to which media influence adolescents' sexual behavior by responding to the following statements: Media messages affect the way kids in my school think about sexual behavior; media messages affect the way teens think about sex; sexual behaviors shown on TV affect the way teens my age behave. The media influence alpha was .70.

Awareness of sex-related myths on television. Participants' expressed their awareness of media fallacies concerning sexual behavior on television and its consequences by responding to the following statements: People on TV make it seem like it's appropriate for teens to be sexually active; characters on TV make it seem as if most teens are having sex; shows on television make it seem like popular people have sex; characters on TV make it seem like sexually transmitted infections rarely happen; characters on TV make it seem as if few teens choose abstinence; characters on TV make it seem as if it is unusual for teens to choose abstinence. The media myths alpha was .72.

Desirability. Participants indicated the extent to which they found media portrayals of sex desirable or enticing, by responding to the following statements: When people in ads act sexy, it makes the products more interesting to me; I like ads that show people flirting; ads that show people acting sexy get my attention; my favorite ads include people flirting. The desirability alpha was .82.

Efficacy. Participants indicated their perceived ability to control or resist the influence of others on their choices concerning sex by responding to the following statements: It's realistic for me to choose not to be sexually active; I'm in control of whether or not I will be sexually active as a teenager; I can choose to resist pressure to engage in sexual behavior; whether or not to engage in sexual behavior is my choice; I won't feel pressured to engage in sexual behavior even if my friends are doing it. The efficacy alpha was .70.

Expectancies. Researchers measured participants' expectancies, which reflect the extent to which they perceive that engaging in a risky sexual behavior will provide positive outcomes, using the following statements: Having

sex shows you are an adult; being sexually active makes you cool; having sex makes you popular; being sexually active helps you fit in with people you want to have as friends. The expectancies alpha was .78.

Perceived teen norms. Perceived teen norms reflect the extent to which study participants perceive that other adolescents engage in risky behaviors. The following statements measured participants' perceived norms: Few teens practice sexual abstinence; waiting to have sex is a nice idea, but nobody really does it. For these measures, a lower score would indicate that participants were less likely to believe that their peers engage in sex, reflecting an accurate understanding of peer norms. The measures correlated at $r = .34, p < .001$.

Attitudes toward abstinence. Researchers measured participants' attitudes toward abstinence using the following statements: It's a good thing for teens my age to wait to have sex; teens should wait at least until they finish high school to have sex; waiting to have sex is a positive choice. The alpha was .71.

Media literacy evaluation. Participants answered questions concerning the *Take It Seriously: Abstinence and Media* program to help researchers evaluate the lessons. Like other study questions, each item used 7-point scales with strongly disagree and strongly agree as anchors and included the following statements: The TISAM lessons will be useful for me; the TISAM lessons were interesting; the TISAM lessons have taught me things I did not know before; the TISAM lessons made me think; I thought it was a good idea to have teens presenting the TISAM lessons; the TISAM presenters seemed to understand my concerns; before the TISAM program, I had never thought about what my life would be like if I got pregnant or got someone pregnant; the TISAM presenters knew what they were talking about. The alpha was .87.

RESULTS

Participants at 10 of the 22 study sites received the media literacy treatment, whereas participants at the remaining 12 sites were in control groups. A one-way analysis of variance indicated that there were no differences in outcomes between the individual sites. As a result, researchers collapsed the sites into one treatment group and one control group and analyzed the data using independent-samples t tests and multiple regressions.

Researchers assessed participants' knowledge of topics addressed in the TISAM program to provide a manipulation check and to determine the success of the program in communicating basic information to participants. All participants answered the following six true-false questions: One of every four sexually active teens gets a sexually transmitted

infection (true); most teenage fathers stay involved with the young woman they have made pregnant (false); abstinence is the only 100% guaranteed way to avoid sexually transmitted infections (true); most teens who get pregnant still finish high school (false); all sexually transmitted infections have visible symptoms (false); most teens who have had sex wish they had waited (true). The results of an independent-samples t test indicated that participants who received the lessons answered more questions correctly than did participants who were control group members, $t(479) = -6.75, p < .001$ (see Table 1).

Consistent with H1 concerning participants' media-based perceptions, treatment group members had greater awareness of media myths concerning sexual behavior and its consequences, $t(510) = 4.92, p < .001$, and lower perceived desirability of sexual media messages, $t(530) = 2.50, p < .01$, than control group members. Researchers found no difference, however, between the treatment and control groups regarding participants' awareness of media influences on teens' sexual behavior.

Consistent with H2 regarding health-related decision-making variables, treatment group members reported higher levels of efficacy, $t(507) = -2.29, p < .01$, lower expectancies related to sexual behavior, $t(530) = 4.55, p < .001$, and had more accurate perceptions of their peers' sexual norms (i.e., were less likely to believe that their peers engage in sex), $t(512) = 3.75, p < .001$, than control group members.

Researchers also assessed the extent to which participants had positive attitudes toward delaying sexual activity. As predicted in H2, teens receiving the media literacy lessons were more likely to have positive attitudes toward abstinence, $t(519) = -4.77, p < .001$, than those who did not receive the lesson.

TABLE 1
Mean Differences Between Experimental and Control Groups on Key Measures

Key Measures	Groups				Scale Range
	Treatment Group		Control Group		
	M	SD	M	SD	
Knowledge (manipulation check) ***	5.50	0.96	4.83	1.22	0-6
Efficacy**	24.46	4.47	23.28	4.94	5-35
Expectancies***	7.57	4.28	9.50	5.47	4-28
Perceived teen norms***	6.73	2.71	7.91	2.82	2-14
Belief in media myths***	30.16	6.45	27.23	6.97	6-42
Perceived desirability of media portrayals**	11.20	5.61	12.48	6.14	4-28
Media influence (ns)	14.38	3.59	13.86	4.26	3-21
Attitudes toward abstinence***	17.82	3.36	16.16	4.50	3-21

Note. ns, nonsignificant.

** $p < .01$. *** $p < .001$.

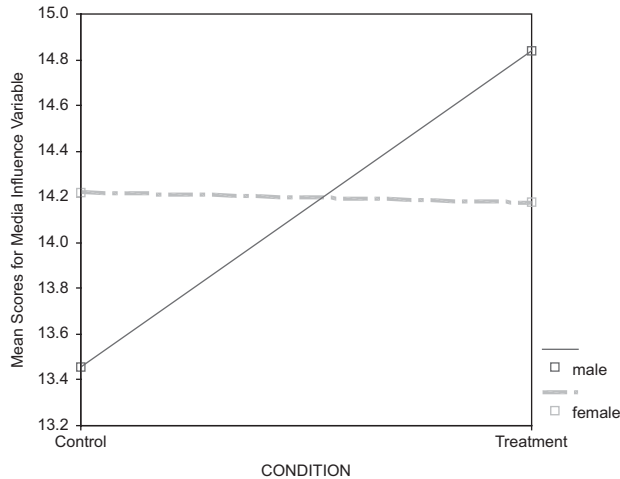


FIGURE 1 Means for media influence by gender and treatment group.

In answer to RQ1, an interaction effect indicated that boys learned substantially more than girls about media influence as a result of participating in the program. As Figure 1 shows, girls in the control condition had a much greater understanding of the media's influence on teen sexual behavior than did boys. In the treatment condition, however, boys' understanding of media influence increased substantially as a result of program participation.

As an additional note, treatment members' mean program evaluation score was 45.92 ($SD = 8.8$) on a summative index on which possible evaluation scores ranged from 8 to 56. Program participants also answered a question that asked them to compare the TISAM media literacy program with other sex education programs in which they had participated. Answer categories were much worse, somewhat worse, about the same, somewhat better, and much better. Among TISAM participants, 85% reported that the program was somewhat better or much better than other sex education programs.

DISCUSSION

Portrayals of sex in the media and their consequences for teen health are of significant concern to health professionals. Misleading sexual portrayals in the mass media are common; experts estimate that adolescents are exposed to 14,000 messages concerning sex each year (Lowry & Shidler, 1993). The purpose of this study was to evaluate a peer-led program that used media literacy to communicate information regarding abstinence and sexual health to young people. This evaluation, based on participants' understanding of the media and their decision-making processes, demonstrated positive results on all tested outcomes. Study results indicated that adolescents receiving the training were less

likely to overestimate the extent to which teens are sexually active, more likely to think they could delay becoming sexually active, less likely to expect that having sex would provide social benefits, more aware of myths about sex, and less likely to consider sexual media imagery desirable.

Study participants showed unambiguous enthusiasm for the lessons, with 85% rating the program as better than other sex education programs in which they had participated. They also demonstrated good recall of lesson material, which focused primarily on societal norms rather than on medical information. Given the message restrictions required of this curriculum, research evidence suggests that this program alone is unlikely to provide sufficient sex education to students (Zanis, 2005), consistent with the position taken by the Society for Adolescent Medicine (Santelli et al., 2006) and based on the evidence-based criteria for successful programs developed by Kirby (2001). Nevertheless, because participants reported that the lessons made them think and taught them something new, the results suggest that media literacy may successfully encourage the development of critical thinking skills among young people, at least concerning sex and the media. Although researchers measured only participants' perceptions in this study, the increase in young people's efficacy should give them a stronger sense of their ability to positively control their sexual health and to resist the peer pressure associated with sexual activity among teens. Research has shown that efficacy is one of the most important determinants of health-related decisions. A critical outcome for sex education programs, efficacy commonly enjoys a strong link to behavior (Caron et al., 2004).

These results suggest that a primary strength of media literacy training is its ability to strip away the facade concerning sex that media provide to young people. Participants come away with a less-idealized and more fact-based understanding of how media operate and the ways in which media outlets use sex and sexual imagery to promote their own ends, such as increased viewership or readership. Based on the results of this study, this critical media perspective and enhanced understanding appear likely to have a positive influence on adolescents' decision making regarding sexual behavior.

Another benefit of media literacy programs may be their ability to reach program participants regardless of gender. Gender differences did not interfere with lesson effectiveness in this study, although in terms of understanding the media's influence on adolescents' sexual behavior, boys may have learned more from the media literacy lessons than girls did. The results of other evaluations of media literacy curricula have indicated that these programs may successfully influence different audiences when they are tailored to meet the varying needs of each group (Austin & Johnson, 1997a; Pinkleton et al., 2007). This suggests that media literacy may provide a flexible tool for reaching multiple target audiences.

As a posttest-only quasi-experiment, it is not possible to generalize this study's results. This study employed a purposive sample without random assignment and employed only one set of media literacy lessons. As a result, it is not possible to pinpoint the specific aspects of the lesson strategies and implementation responsible for the positive results obtained in this trial. To determine that a typical media literacy program can accomplish the outcomes demonstrated in this evaluation would require random assignment to a representative variety of curricula. In addition, readers should interpret the gender-related finding with care given the nature of this study. Adolescent decision making regarding sexual abstinence is a complicated process and researchers should conduct additional studies to confirm or disconfirm gender-based outcomes in an effort to better understand this process. In future research, it would be useful to perform an evaluation with a pretest–posttest design, including random assignment to conditions and delayed posttests measuring actual behavior.

Even with these limitations, the results of this study suggest that media literacy has great promise for sex education by providing adolescents with the cognitive framework necessary to understand and resist the influences of media on their decision making concerning sex. Because sexual imagery is such a common part of media messages, there seems to be an almost intuitive link between sex and media. Educators can take advantage of this link in communicating health-based information to adolescents. This link may allow media literacy–based sex education to seem relevant and useful to its audience, for example. Because adults tend to believe that media comprise an important information source for adolescents and commonly express concerns about sexualized media imagery, a media literacy–based curriculum also may be well received by a broad spectrum of parents. Finally, the results of this study demonstrate how peers can exert positive influences on each other and indicate that a peer-led media literacy curriculum might provide more general benefits for adolescents that go beyond the content of the curriculum.

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